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Amendments to the Claims

1-47. (Canceled)

48. (Previously Amended) (Allowed) An isolated nucleic acid, comprising a sequence of nucleotides that encodes SEQ ID NO: 43, SEQ ID NO: 66, SEQ ID NO: 67, SEQ ID NO: 69, or a complementary sequence of any of such nucleotides.

49-50. (Canceled)

62 51. (Previously Amended) (Allowed) An expression vector, comprising the isolated nucleic acid of claim 48, and operably linked to said nucleic acid, regulatory sequences effective for expression of the nucleic acid in a selected host cell.

3 52. (Original) (Allowed) The recombinant expression vector of claim 51, wherein said vector is suitable for transfection of a bacterial cell.

24 53. (Original) (Allowed) A heterologous cell transfected with the vector of claim 51, wherein said cell expresses a biologically active  $\beta$ -secretase.

5 54. (Original) (Allowed) The cell of claim 53, wherein said cell is a eukaryotic cell.

10 55. (Original) (Allowed) The cell of claim 53, wherein said cell is a bacterial cell.

7 56. (Original) (Allowed) The cell of claim 53, wherein said cell is an insect cell.

8 57. (Original) (Allowed) The cell of claim 53, wherein said cell is a yeast cell.

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91 58. (Currently Amended) (Previously Allowed) A method of producing a recombinant  $\beta$ -secretase enzyme, comprising culturing a cell transfected with a vector comprising a sequence of nucleotides that encodes [~~SEQ ID NO: 2,~~ SEQ ID NO: 43, SEQ ID NO: 57, SEQ ID NO: 58, SEQ ID NO: 59, SEQ ID NO: 60, SEQ ID NO: 66, SEQ ID NO: 67, SEQ ID NO: 68, SEQ ID NO: 69, SEQ ID NO: 70, SEQ ID NO: 74, SEQ ID NO: 75, or a complementary sequence of such nucleotides under conditions to promote growth of said cell, and subjecting an extract or cultured medium from said cell to an affinity matrix.

10 59. (Original) (Allowed) The method of claim 58, wherein said affinity matrix contains a  $\beta$ -secretase inhibitor molecule.

62 60. (Previously Amended) (Allowed) The method of claim 59, wherein said inhibitor molecule is P10-P4'staD->V (SEQ ID NO:73).

12 61. (Original) (Allowed) The method of claim 58, wherein said matrix contains an antibody characterized by an ability to bind  $\beta$ -secretase.

13 62. (Currently Amended) (Previously Allowed) The method of claim 61, wherein said antibody binds specifically to any of the protein compositions of [~~SEQ ID NO: 2,~~ SEQ ID NO: 43, [~~SEQ ID NO: 56,~~ SEQ ID NO: 57, SEQ ID NO: 58, SEQ ID NO: 59, SEQ ID NO: 60, SEQ ID NO: 66, SEQ ID NO: 67, SEQ ID NO: 68, SEQ ID NO: 69, SEQ ID NO: 70, SEQ ID NO: 71, SEQ ID NO: 74, SEQ ID NO: 75], or a  $\beta$ -secretase protein].

14 63. (Previously Amended) (Allowed) The method of claim 61, wherein said antibody further lacks significant immunoreactivity with a protein having the sequence of SEQ ID NO: 2.

15 64. (Previously Amended) (Allowed) A heterologous cell, comprising

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(i) a nucleic acid molecule encoding a  $\beta$ -secretase protein of SEQ ID NO: 43, SEQ ID NO: 66, SEQ ID NO: 67, SEQ ID NO: 69, or the complementary sequence of said nucleic acid molecules;

(ii) a nucleic acid molecule encoding a  $\beta$ -secretase substrate molecule; and

(iii) operatively linked to (i) and (ii), a regulatory sequence effective for expression of said nucleic acid molecules in said cell.

116/65. (Original) (Allowed) The cell of claim 64, wherein said nucleic acid encoding said  $\beta$ -secretase protein is heterologous to said cell. 15

172/66. (Previously Amended) (Allowed) The cell of claim 64, wherein both said nucleic acids encoding said  $\beta$ -secretase protein and encoding said  $\beta$ -secretase substrate molecule are heterologous to said cell. 15

186/67. (Previously Amended) (Allowed) The cell of claim 64, wherein said  $\beta$ -secretase substrate molecule is selected from the group consisting of the wild type  $\beta$ -amyloid precursor protein (APPwt), the Swedish mutant  $\beta$ -amyloid precursor protein (APPsw), and  $\beta$ -secretase cleavable fragments thereof. 15

196/68. (Previously Amended) (Allowed) The cell of claim 64, wherein said  $\beta$ -secretase substrate is selected from the group consisting of a maltose binding protein fused at the carboxy-terminus to the 125 carboxyl-terminal amino acids of  $\beta$ -amyloid precursor protein (APP) having the cleavage site of SEQ ID NO: 54 (MBP-C125wt) and a maltose binding protein fused at the carboxy-terminus to the 125 C-terminus amino acids of  $\beta$ -amyloid precursor protein (APP) having the cleavage site of SEQ ID NO: 51 (MBP-C125sw). 15

206/69. (Previously Amended) (Allowed) The cell of claim 64, wherein said  $\beta$ -secretase-cleavable fragment is selected from the group consisting of SEQ ID NO: 82; SEQ ID NO: 83; SEQ ID NO: 84; SEQ ID NO: 85; SEQ ID NO: 86; SEQ ID NO: 87; SEQ ID NO: 88; 18

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62 SEQ ID NO: 89; SEQ ID NO: 90; SEQ ID NO: 91; SEQ ID NO: 92; SEQ ID NO: 93; SEQ ID  
NO: 94; SEQ ID NO: 95; and SEQ ID NO: 96.

70-113. (Canceled)

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